REMARKS

Claims 14, 18-20, 24, 25 and 27-29 are pending. By this Amendment, claims 16, 21-23 and 26 are cancelled; claims 14, 24, 25, 27 and 28 are amended; and claim 29 is added. Reconsideration in view of the above amendments and following remarks is respectfully requested.

Claims 14 and 22-24 were rejected under 35 U.S.C. §103(a) over the abstract of Japanese Publication Number 59-151424 (JP 424). The rejection is respectfully traversed.

Claim 14 recites a method of bonding a first planar substrate to a second planar substrate by a bonding material in the form of a viscous fluid including pumping the viscous fluid with a dosing pump to a dosing arm connected to the dosing pump and positioned over the first substrate, forming a layer of the viscous fluid on the first substrate by dosing the first substrate with viscous fluid from the dosing arm, rotating the first substrate with a rotary drive, positioning the second substrate onto the layer of viscous fluid formed on the first substrate with a connecting means, spinning off excess viscous fluid of the layer between the first substrate and the second substrate with a rotary centrifugal drive, and controlling a thickness of the layer form on the first substrate to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm with respect to the first substrate, a rotary speed of the rotary drive, and a rotary speed of the rotary centrifugal drive in response to at least of a temperature of the first substrate, a temperature of the second substrate, a temperature of the viscous fluid, and the viscosity of the viscous fluid.

Claim 24 recites an apparatus for bonding a first planar substrate to a second planar substrate by bonding material in the form of a viscous fluid including a pump that pumps the viscous fluid, a dosing arm connected to the pump and positioned over the first substrate that doses the first substrate with the viscous fluid and forms a layer of the viscous fluid on the first substrate, a plate that supports the first substrate, a rotary drive that rotates the plate, a

connecting means that positions the second substrate onto the layer of viscous fluid formed on the first substrate, a rotary centrifugal drive that spins off excess fluid of the layer between the first substrate and the second substrate, and a controller that controls the thickness of the layer to predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm, a rotary speed of the rotary drive and a rotary speed of the rotary centrifugal drive in response to at least one of a temperature of the first substrate, a temperature of the second substrate, a temperature of the viscous fluid, and the viscosity of the viscous fluid.

JP 424 disclose a coating device that controls a thickness of the coating film supplied from an injection nozzle 4 onto a substrate 5 that is rotated using a motor 6. There is no disclosure or suggestion by JP 424 of bonding a second substrate to the substrate 5 by positioning the second substrate onto a layer of viscous fluid formed on the substrate 5. There is also no disclosure or suggestion by JP 424 of spinning off excess viscous fluid of the layer between a first substrate and second substrate with a rotary centrifugal drive. Accordingly, JP 424 cannot anticipate or render obvious claims 14 and 24.

Claims 22 and 23 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claim 14 and for the additional features recited therein.

With respect page 4, paragraph 3 of the Office Action in which the Examiner alleges that a dosing pump is a conventional method for supplying fluid to a dosing arm in the art of spin coating wafers and that lacquer and resist have similar properties, in accordance with MPEP §§2144.03 and 2144.06, the Examiner is respectfully requested to cite a reference which discloses or suggests that a dosing pump is such a conventional method for supplying fluid and that discloses or suggests that lacquer and resist have similar properties or withdraw the rejection.

Reconsideration and withdrawal of the rejection of claims 14 and 22-24 under 35 U.S.C. §103(a) over JP 424 are respectfully requested.

Claims 14, 16, 20-24 and 26-28 were rejected under 35 U.S.C. §103(a) over EP 0706178A2 (EP 178) in view of JP 424. The rejection is respectfully traversed.

EP 178 discloses optical information medium and methods and units for producing the optical information medium. The optical information includes two substrate 1 and 5 and a photopolymer resin film 10 provided between the substrates 1 and 5 for bonding the substrates 1 and 5 with each other.

Figure 4 of EP 178 discloses a unit a producing the bonded disk. The first substrate 1 is moved from a first block 31 to a point G on a transporter 45 that includes an applicator of the photopolymer resin and a disk rotator. At the point G, the photopolymer resin is applied in a donut shape by rotating the first substrate 1 at a low speed. The second substrate 5 is moved from a second block 36 to a point H on a transporter 45 and then moved by the transporter 45 to the point G where the second substrate 5 is superposed on the first substrate 1. At the point G, the first and second substrates 1 and 5 are integrally rotated at a high speed, thereby defusing the photopolymer resin substantially uniformly between the first and the second reflective films. See column 14, lines 30-48.

There is no disclosure or suggestion by EP 178 of a rotary drive that rotates the first substrate and rotary centrifugal drive that spins off excess viscous fluid between the first substrate and the second substrate as recited in claims 14 and 24. As discussed above, the transporter 45 of EP 178 rotates both the first substrate at a low speed when the photopolymer resin is applied and the first and second substrates after the second substrate 5 is superposed on the first substrate 1.

With respect to the assertions on page 7, lines 4-8 of the Office Action that a dosing pump is a conventional method for supplying fluid to a dosing arm and that lacquer and resist

have similar properties, as discussed above, the Examiner is respectfully requested to cite a reference which clearly discloses or suggests a dosing pump and that lacquer and resist have similar properties or withdraw the rejection.

JP 424 fails to cure the deficiencies of EP 178 in that JP 424 also fails to disclose or suggest a rotary drive that rotates the first substrate and a rotary centrifugal drive that spins off excess viscous fluid of the layer between the first substrate and the second, as recited in claims 14 and 24. Accordingly, even assuming it would have been obvious to combine EP 178 and JP 424 such a combination would not have resulted in the invention claims 14 and 24.

Claims 20, 27 and 28 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claims 14 and 24 and for the additional features recited therein.

Claims 18, 19 and 25 were rejected under 35 U.S.C. §103(a) over EP 178 in view of JP 424 and further in view of EP 0595749 A2 (EP 749). The rejection is respectfully traversed.

Claims 18, 19 and 25 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claims 14 and 24 and for the additional features recited therein. In addition, it is respectfully submitted that EP 749 fails to cure the deficiencies of EP 178 and JP 424 as discussed above with respect to claims 14 and 24 and that any combination of EP 178, JP 424 and EP 749 would fail to result in the inventions of claims 14 and 24.

Reconsideration and withdrawal of the rejection of claims 18, 19 and 25 under 35 U.S.C. §103(a) over EP 178 in view of JP 424 and EP 749 are respectfully requested.

In view of the above amendments and remarks, Applicants respectfully submit that all of the claims are allowable and that the entire application is in condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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Attachment:
Appendix (pp. 9-11)

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES

IN THE CLAIMS:

Claims 14, 24, 25, 27 and 28 are amended as follows:

14. (Twice Amended) A method of [applying a layer of a viscous fluid onto a first planar substrate] bonding a first planar substrate to a second planar substrate by a bonding material in the form of a viscous fluid, comprising:

pumping the viscous fluid with a dosing pump to a dosing arm connected to the dosing pump and positioned over the first substrate;

forming [the] a layer of the viscous fluid on the first substrate by dosing the first substrate with viscous fluid from the dosing arm;

rotating the first substrate with a rotary drive; [and]

positioning the second substrate onto the layer of viscous fluid formed on the first substrate with a connecting means;

spinning off excess viscous fluid of the layer between the first substrate and the second substrate with a rotary centrifugal drive; and

controlling a thickness of the layer formed on the first substrate to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm with respect to the first substrate, [and] a rotary speed of the rotary drive, and a rotary speed of the rotary centrifugal drive in response to at least one of a temperature of the first substrate, a temperature of the second substrate, a temperature of the viscous fluid, and a viscosity of the viscous fluid.

24. (Twice Amended) An apparatus for [applying a layer of a viscous fluid onto a first planar substrate] bonding a first planar substrate to a second planar substrate by a bonding material in the form of a viscous fluid, comprising:

a pump that pumps the viscous fluid;

a dosing arm, connected to the pump and positioned over the first substrate, that doses the first substrate with the viscous fluid and forms a [the] layer of the viscous fluid on the first substrate;

a plate that supports the first substrate;

a rotary drive that rotates the plate;

a connecting means that positions the second substrate onto the layer of viscous fluid formed on the first substrate;

a rotary centrifugal drive that spins off excess viscous fluid of the layer between the first substrate and the second substrate; and

a controller that controls a thickness of the layer to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm, [and] a rotary speed of the rotary drive, and a rotary speed of the rotary centrifugal drive in response to at least one of a temperature of the first substrate, a temperature of the second substrate a temperature of the viscous fluid, and a viscosity of the viscous fluid.

25. (Twice Amended) The apparatus according to claim 24, further comprising:

at least one sensor that measures the thickness of the layer, wherein the controller controls at least one of the dosing pump, the position of the dosing arm, [and] the rotary speed of the rotary drive, and the rotary speed of the rotary centrifugal drive to automatically adjust deviations between the measured thickness of the layer and the predetermined thickness to within at least one tolerance.

27. (Twice Amended) The apparatus according to claim 24 [26], wherein the controller controls the thickness of the layer of viscous fluid by controlling at least one of a connecting pressure of the connecting means and a rotary speed of the rotary centrifugal drive.

28. (Amended) The method according to claim 14 [16], further comprising: controlling the thickness of the layer of viscous fluid by controlling at least one of a connecting pressure of the connecting means and a rotary speed of the rotary centrifugal drive.

Claim 29 is new.

End of Appendix.